

BLACKFORD (C.M.) JR.

MEDICAL EDUCATION:

AS IT WAS, AS IT IS, AND AS IT MIGHT BE.

BY

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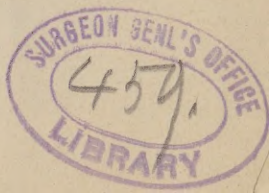
Medical Education: As it Was, as
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By CHARLES MINOR BLACKFORD, JR., M. D.,
Of Lynchburg, Va.

Mr. President and Fellows, Ladies and Gentlemen :

I have a very natural feeling of hesitancy in rising to deliver the Annual Address before so many who are my superiors in age, experience and professional learning; and this is increased when I think of those who have preceded me in this honorable position, and consider that I must be the successor of the many distinguished men who, in days gone by, have addressed you on similar occasions. I am happy, however, in having the opportunity of extending to you a welcome to this, my native city, and feel sure that, in so doing, I but voice the sentiments of my professional confrères.

The feeling of hesitancy with which I undertook the preparation of the Address was much increased when the selection of a subject presented itself to my mind. A scientific essay was out of the question, for I have nothing new to tell, and the scientific mind of the world to-day is like the Athenians of old, whose chief care, we are told, was to hear some new thing. Such being the case, I am compelled to choose something with which I am conversant, and which is, or should be, of interest to every one



present, and that is, *Medical Education—as it Was, as it Is, and as it Might Be.*

I am aware that when the phrases, “as it was,” and “as it is,” are used, that the usual sequence is, “as it will be,” but for reasons, which I hope to make clear before I close, I say, “as it might be,” in its stead; for thorough and excellent as the modern educational facilities are in many cases, there is room for improvement in them, as every young practitioner before me will admit, and there are grave reasons to fear that the desired improvements will not be made.

The modern way of investigating any subject is by what may be called the historical or evolutionary method. In pursuing this plan, it is necessary to trace the object of investigation to its primitive source, and having reduced it to its simplest form, to study each addition to it, each complexity, each modification, by the light derived from the study of the whole, with all the superstitions or theories that obtained credence at the time that such modification of the original was made. In this way, and in this way only, can a comprehensive view of any subject be obtained, and I must ask that you bear with me while I review in brief the history of medical education.

For this purpose, it is not necessary for us to go far into the mists of antiquity, and to conjure up the spirit of the almost mythological Æsculapius; but the history of the three great scientists of classic ages is well worth our attention.

In a time when all medical learning was transmitted by word of mouth, it is difficult to obtain a connected idea of the course of study that the medical student followed, and we are forced to draw our own deductions from the biographies of such of the best known physicians as have survived. The three whom we will consider are Hippocrates, Aristotle, and Galen.

It may seem strange that Aristotle is considered as a physician, but though he did not practice, he was the predecessor of that long line of physiologists who ask questions of Nature, and strive to interpret correctly the answers she gives them. As Fulton and Rumsey are respected as the originators of steam navigation, although their inventions are mere toys to-day, so should we respect and admire the researches of this great man, though

many of his observations were crude and many of his deductions false. He planted the seed from which the vast tree of modern science sprang.

But for our purpose to-night, it is not the deeds of these pioneers which interest us so much as it is the preparation made by them for their deeds, as it is the progress of medical education rather than of medical thought, that we are pursuing; and the early lives of these, our professional forefathers, are more instructive in this investigation than the fullest details of their accomplishments.

The idea that one whose life-long study was to be his fellow-man, should be a man of wide culture and varied attainments, is an old one, and we find it carried out to its fullest extent in the education of the three great fathers whom I have named. To show that this was the case, it is but necessary to review the fragmentary biographies that have survived, and note how carefully every opportunity was grasped, every avenue to learning sought. We will consider these in chronological order, and therefore begin with Hippocrates.

Hippocrates, "The Prince of Medicine," "The Father of Physics," "The Oracle of Cos," "The Divine Old Man," as he was variously styled, was born on the Island of Cos about B. C. 460. He was of the line of the Æsculapiads, the alleged descendants of Æsculapius, and was himself reputed to be seventeenth in lineal descent. His time was, fortunately, the golden age of Athens, he being a cotemporary of Plato, Socrates, Herodotus, Thucydides, and Gorgias.

Being designed for the ancestral profession of medicine, he was educated by the greatest masters of his time, and was thoroughly taught logic, physics, geometry, astronomy, and philosophy, as well as the medical sciences. After spending many years in the schools of Athens, his father, Hericlides, taught him the traditional lore that had been handed down from generation to generation in the family of Æsculapius. The young physician, for such he now was, practiced in his native island for several years under the direction of his father, and, on the death of the latter, determined to travel to acquire further information.

For twelve years he was an indefatigable student, visiting every city in Greece and Asia Minor, obtaining information of the properties of medicinal agents, and profiting by the experience and experiments of others. During this protracted sojourn in foreign countries, he was an ardent student of all the branches of ancient learning, and became known as one of the most accomplished men of his day. His writings have been regarded as models of elegance. His style has been described as "perfect and well adapted to the sciences by its clearness and accuracy of expression."* His works cover a multitude of topics, and apparently touch each but lightly, though a careful reading shows that on each he is as profound as the learning of his day permitted. "The perusal of the works of Hippocrates is, to this day, one of the most instructive exercises to which we can apply; not that the facts which are found contained in them have not been revised by the moderns in collections that are infinitely more ample and perfect, but because no other writer, without exception, initiates us so far into the mysteries of nature, or teaches us to interrogate her with that wise caution, and that scrupulous attention, which alone can enable us to trace from her answers those principles and rules which must always be recognized as genuine."†

It would be foreign to our subject to sketch the life of Hippocrates further, as it is his education which chiefly concerns us now; so I pass to the next of the three men who have been selected as typical classical scientific thinkers.

Aristotle was born in Stagira, a town on the Strymonic Gulf, in the year 384 before the Christian era. At the age of sixteen, he came to Athens, and put himself under the instruction of Plato, with whom he passed twenty years, thirteen of them consecutively. Under this teacher he acquired those habits of accurate research and of elimination of sources of error which were to stamp him as the greatest scientist of antiquity; for no one can become eminent in either the fixed or speculative sciences in whom painstaking and scrupulous care in minutiae is not a characteristic.

* Cabanis, "*Coup d' Oeil sur les Revolutions et sur la Réforme de la Médecine.*"

† Pettigrew. "*Memoirs of Physicians, Surgeons,*" etc.

It is Aristotle the physiologist, and not the philosopher, to whom we give attention to-night. His researches extended into every portion of the body; and although his observations were the most minute and thorough that had been made up to that time, they contain many curious errors. Indeed, Mr. Huxley* seems to incline to the opinion that the "*Historia Animalium*" is a compilation of the notes made by his students, for he says: "As a whole, it is a most notable production, full of accurate information and of extremely acute generalizations of the observations accumulated by naturalists up to that time. And yet, every here and there, one stumbles upon assertions respecting matters which lie within the scope of the commonest inspection, which are not so much to be called errors as stupidities. What is to be made of the statement that the sutures of women's skulls are different from those of men; that men and sundry male animals have more teeth than their respective females; that the back of the skull is empty, and so on? It is simply incredible to me that the Aristotle who wrote the account of the heart also committed himself to absurdities which can be excused by no theoretical prepossession, and which are contradicted by the plainest observation."

Let us next consider Galen. This great man was born at Pergamus, in Asia Minor, in the year 131 A. D., during the reign of the Emperor Hadrian. The young man received a full education, becoming familiar with the teachings of the Stoic, Academic, Peripatetic, and Epicurean Schools of Philosophy, and at the age of eighteen years began the study of his profession. This he pursued with ardor under the foremost teachers of his time, but giving most care and attention to the writings of Hippocrates. He travelled extensively to converse with and witness the practice of physicians in foreign countries, as well as to familiarize himself with the productions of the countries visited. Among other places Galen visited Alexandria, where he saw a human skeleton. He made some physiological experiments on living animals, from which he decided that the brain was the seat of intellectual power, and that its function was not to cool the

* Certain Errors Respecting the Structure of the Heart, Attributed to Aristotle. By T. H. Huxley.

blood, as had been the opinion previously. He, however, retained the doctrine of the "animal spirit," which he conceived to flow through the nerves and to be the active agent of the soul. These views have now been shown to have been erroneous, but they show their promulgator to have been a man of deep study, acute observation, and powerful intellect.

Having sketched in this manner the early lives of the great medical scientists of antiquity, let us see if there is anything in their training from which we may learn. We see that these three whose fame is still bright after the lapse of nearly two thousand years, were men of wide information and broad culture; what we would now call their "academic" training was of the most liberal kind. With this foundation, we see that many years were devoted to medical study under prominent teachers, and that the whole was crowned by foreign travel and alien experience. Such being the preparation, is it surprising that the life-work of these men was of the most enduring character, and their opinions and suggestions are considered of value even till the present time?

We have scarcely time to go further into the history of ancient medicine while the great field of mediæval practice lies fallow before us, with all its quaint superstitions, learned ignorance, and crude, unproven theories.

When we consider that health is the basis on which our whole happiness rests, and that from the earliest times disease has played havoc with human life, it is not surprising that impostors have arisen who claimed to have the much desired panacea, and that the multitude have followed those claiming to possess so great a boon. The many plagues and widespread epidemics that swept over Europe gave these impostors full scope, for they were generally ascribed to divine or diabolical power, and, as a rule, magic was the only agency invoked to check them.

A glance at the hygienic condition of the world during the Dark Ages may be of interest in this connection.

The cities were crowded within their walls, their streets narrow and unpaved, without drainage and without cleaning. The supply of water was derived from springs and wells within the city limits, and was deficient in quantity and of dubious purity.

Even among the wealthy and noble classes matters were but little better. The poets and novelists have thrown a glamour of romance about the feudal castles, that it seems sacrilege to withdraw, but the light of modern investigation has removed the theatrical tints that surround them. The occupants lived in rooms shared by cattle, dogs, and swine, sleeping generally on decomposing piles of fodder. From their unsavory bed-follows, they became covered with vermin and filth of every description. Baths were usually obtained in neighboring streams, and as a rule, were dispensed with in winter. Soap was almost unknown; combs and brushes were still in the remote future. Clothing was made of coarse linen or of roughly tanned hides, and a suit once donned was rarely doffed for any cause. The rooms were carpeted with rushes, and the refuse from the table that was not devoured on the spot by dogs, was thrown on the floor and allowed to decompose there, being only covered with another layer of rushes. There were no chimneys, and the smoke from the open hearths and dingy lamps, curled and circled among the rafters. The food supply was extremely irregular, and a period of scarcity would be succeeded by a time of plenty, in which the feudal lord and his retainers would gorge themselves to repletion, washing down the great lumps of badly-cooked meat with copious draughts of strong wines or ales.

If this was the condition of the nobility, and even of royalty, the circumstances of the poor can readily be imagined. The soil was badly cultivated, both on account of the ignorance of the cultivator, and the probability of having the crop destroyed by some raiding party. The only foodstuffs grown were wheat, oats, rye and barley, and of these but barely enough for sustenance. Every year of scant crops became a year of famine. The undrained, half-tilled fields became sources of malarial disease in the country, and the filthy houses and narrow lanes, choked with all kinds of decomposing filth, caused untold disease in the cities. Add to this the habits of personal uncleanness on the part of the people, and it will be seen that the condition of mediæval Europe was not so delightful as the poets would have us think.

It is not surprising that with such surroundings and with

famine close at hand, that "pestilence that walketh at noonday" should have been a frequent visitor. In the twelfth century there were fifteen widespread epidemics and many famines; in the thirteenth century twenty epidemics and nineteen famines; in the early part of the fourteenth century, eight epidemics and more famines, and it should be remembered that these epidemics were so extensive as to be regarded as national, if not universal catastrophies. In 1348, the "Black Death" first appeared in England—no doubt imported from the East originally. Within a few months it had gained firm foot-hold throughout the whole kingdom, even in the most remote villages, and so great was the mortality from it, that in many places but one-fourth of the people remained alive. In London, alone, over one hundred thousand deaths occurred from this single cause*. Throughout Europe it has been estimated that twenty-five millions, or about one-fourth of the entire population, was swept away.†

These terrible visitations were thought by most persons to be evidences of divine wrath; though some, as if foreshadowing the ideas of Malthus, thought them to be blessings in disguise sent to remove the surplus population. Mohammedans claimed‡ that certain genii with legs like fowls, presided over the plague, and that the selected victims were struck by arrows which could be felt but not seen. They asserted that those so struck can never recover. Many Moslem claimed to have seen these genii. Another writer§ says: "The evil spirit has been seen to glide along their roofs. No one dares to doubt the assertion. He is a decrepid object, covered with funeral shreds, and has been heard to call by their names those whom he wished to cut off from the number of the living. Nocturnal music and murmuring voices have been heard in the darkest nights, and phantoms have been seen moving in solitary places near the cemeteries. Strange dogs have howled in a dismal manner, and their voices have been terrifically re-echoed along the deserted streets. Thus observed to me an inhabitant of Naupli: 'You must take care not

* Wilson. Hand-book of Hygiene and Sanitary Science.

† Wilson. Idem

‡ "Travels in Africa," by Mr. Jackson, Consul at Mogodor.

§ Pouqueville. Travels in Morea.

to answer if you hear yourself called at night; you will sometimes be attracted by symphonies—do not listen to them, but cover yourself over in the bed, for it is the decrepid demon, that is the plague, which knocks at your door.’”

Holding such views as to the pathology and causation of epidemic diseases, it will be interesting to see what treatment, preventive and curative was used. The idea of divinity in disease brought forth fruit in treating them by prayers and consultations of oracles and soothsayers; but some few men were so clear-sighted as to perceive the futility of such means. Celsus says in the preface of his work, “*De Re Medica* :” “Diseases are to be attributed to the wrath of the immortal gods, and from them is relief to be sought;” * though further on he says, “Diseases are to be cured by remedies, not by eloquence.† Notwithstanding this sage advice, we find that charms, amulets and talismans were extensively used in the Middle Ages, probably having been brought back from the East by the crusaders. A quill filled with mercury and suspended from the neck, was looked on as a sure preventive of the plague. Pope Adrian used an amulet composed of dried toad, arsenic, powdered emerald, tormentil, pearl, coral, hyacinth, and tragacanth. Lord Chancellor Hatton, writing to Sir Thomas Smith, says: “I am likewise bold to recommend my most humble duty to our dear Mistress (Queen Elizabeth) by this *letter* and *ring* which hath the virtue to expel infectious airs, and * * * I trust, sir, when the virtue is known, it shall not be refused for the value.”‡ History, however, is silent as to the composition of this amulet, as well as to its efficiency.

Another amulet of rare virtue was a spider enclosed in a nutshell, wrapped with silk. This was a specific for malaria, as was also a bit of the rope with which a criminal had been hanged, or the chips of a gallows. Another method of treating this disease was by writing the words “*Febra Fuge*” on a piece of paper, and cutting off a letter each day, the idea being that as the words were used up, the fever would diminish. The writer to whom we are indebted for this valuable information§ further says that

* *Morbos ad iram deorum immortalium relatos esse, et ab iisdem opem posci solitam.*

† *Morbi, non eloquentia sed remediis, curantur.*

‡ Harleian MSS. quoted in “*Medical Superstitions*.” by T. J. Pettigrew.

§ Skippon. *Journeys through the Low Countries*, etc.

within the same year fifty patients were reported to have been cured by this means.

But I seem to have wandered far from the subject of medical education; indeed, learning of all kinds seems to vanish with the triumph of barbarity after the fall of the Roman Empire. The Christian church, it is true, established monasteries in which some few sparks of ancient culture were kept alive; but these were so secluded that but little influence was exerted by them on the world at large. Many, if not all, of the monks shared the superstitions of the times, and the few seminaries in which the classical practice of medicine was in use, so masked it with miracles and wonders that but little science was seen.

But a new class was arising. With the fall of the Byzantine Empire, Greek scholars were scattered throughout the Orient who carried with them the teaching of classic ages. These found eager learners among the Saracens, and soon vague rumors of the skill of Arabian physicians and surgeons were heard in Europe. The Moors in Spain attained great fame as practitioners and teachers of medicine, though the physicians of the rest of Europe denounced their teaching and treatment as heretical and sacrilegious. The Moorish sovereigns, however, were lovers of literature and science, and under their beneficent rule these branches of learning flourished. Avenzoar was a typical product of the time. He was trained in the philosophy of the Greeks, and was an indefatigable student of Galen and Hippocrates, whom he greatly admired. Anatomy and physiology owe much to him, and his descriptions of several physiological processes are wonderfully accurate. He suggested feeding patients who suffered from any difficulty of swallowing, through a silver tube, and also recommended supplying nutritive materials by inunction. In many respects this man, although a "barbarian" in the parlance of Europe, was one of the most enlightened physicians in the world's history.

The only hope of reviving true medical science now lay in these Saracens, and when the first European University, that at Salerno, was established, the bulk of the medical knowledge centered there was derived from them. This University long remained famous, for though founded in the ninth century, it was

emineat in 1231, when it was constituted the Royal School of Medicine of the kingdom of Naples by the Emperor, Frederick II.

From this humble source sprang the many Universities of Europe, for the success attending the instruction given at Salerno produced many imitators. It was not until the twelfth century, and immediately following it, however, that the founding of universities became common, and that facilities were given students to become accomplished in their profession.

Such instruction as was given was so mixed with superstition, alchemy, astrology, and magic, as to be of little value, and the physician was generally such a charlatan as to forfeit the respect, though retaining the fear of his clientele. A typical example can be found in Paracelsus. He claimed the power of rendering man immortal, yet died at the early age of forty-eight. He had obtained his knowledge from travelling and consulting monks, barbers, old women, and all who claimed an acquaintance with the occult arts. He became noted from his vaunting a nostrum which he styled "Azoth," "the tincture of life," "the panacea." He announced that a hair of his head knew more than all the writers of his time, and that the clasps of his shoes were more learned than Galen. However, in spite of this bombast, he was a pioneer in his constant appeal to Nature as his guide. He tramped throughout Europe, saying that Nature was the best book for a physician to study, and that it could be learnt only by walking over its leaves. He attacked the humoral theory of disease, and having obtained a glimpse of physiological chemistry, asserted that most diseases were caused by disturbed chemical processes in the body. His character is composed of contradictions, and even to this day it is impossible to judge it correctly.

The opening of the medical schools in the Universities of Salerno, Seville, Salamanca, Vienna, Bologna, Paris, and Prague, commences the present era of medical teaching, in which instruction is given more or less publicly by lectures and demonstrations to large classes, in lieu of the individual instruction formerly given.

It is difficult, not to say impossible, to make out from the scant records that have been preserved, precisely what the course at

these primitive schools was ; for pathology was unknown, physiology but dimly foreshadowed, anatomy was proscribed by the Church, and chemistry was looked on as magical and opposed to religion. The renaissance had introduced into Europe the writings of the Greek scientists, which were studied with avidity. The exaggerated admiration of the classics produced harm, by leading men to think that all knowledge was complete, and thus checking the investigation of natural phenomena. Medical knowledge was purely empirical, and consisted of a collection of facts without generalization or classification.

But the renaissance continued. Petrarch assailed with bitterness the naturalists and materialists of his day. The scholastic modes of thought sank into contemptuous oblivion with the advance of Greek studies, and the newly aroused curiosity as to the workings of Nature, stirred men like Alberti, DaVinci, and Da-Porta to make physical experiments and invent instruments. The overthrow of the school-men opened the door to enlightenment, and men could advance without fear of the doom declared for heretics. When what Symons calls the "massive vengeance of the Church," which had hung over the heads of thinkers like a pall, was removed, science advanced with rapid strides. Errors were detected in the classic writers, and they were no longer slavishly followed, for though valuable as they were in refuting superstition, it was soon found that they were but finger-posts pointing the way, and not the goals themselves.

The medical student of the renaissance who completed the full curriculum, was instructed in the Latin and Greek languages so as to read, write and speak them with fluency. He was drilled in the writings of Hippocrates, Galen and Aristotle. Botany, or rather the disjointed study of plants that was dignified by the name before the time of Linnæus, was taught, but only so far as medicinal plants were concerned.

With the advancement in scientific knowledge, the curriculum for medical students enlarged until the present time ; and this brings us to the second division of our subject: Medical Education, as it is.

The facilities for instruction which the medical student of to-day enjoys, are superior in many respects to those of his prede-

cessor of the last generation. The reduction in price of the higher literary learning enables him to receive a better preliminary training than was formerly available, and the liberal endowments of medical schools and hospitals, give laboratory and clinical opportunities that before had to be sought in the great universities of the Old World.

But as the strength of a chain is but the strength of its weakest link, so the merits or demerits of our American system lie not so much in the opportunities which the student may embrace as in the proficiency required of him before he is declared by his college to be fitted to practice. I have before me as I write, the Annual Announcements of twelve American medical schools.* Of these, one requires twenty-seven months of study for its degree, two require twenty-one months, one requires twenty, two require eighteen, one requires fifteen, four require twelve and one requires ten. These all require at least two, and many three terms, but the collegiate year in but one of these colleges exceeds seven months, and in one is but five. When the varied scientific information which is demanded of the physician to-day is considered, it seems hardly possible that a satisfactory knowledge of the science of medicine, to say nothing of the acquirement of the art of treatment, can be obtained in so short a time. In three years a man is expected to become a master of Anatomy, Chemistry, Physics, Physiology, Materia Medica, Hygiene, Surgery in all its branches, Medicine and Medical Jurisprudence, to say nothing of Pathology, Bacteriology and Electricity. According to published statements, the same course requires five years in England and eight in Germany; and making all due allowance for the genius of American students, the discrepancy is striking. In Great Britain the intending medical student is required to pass rigid examinations in English, Latin, Arithmetic, Algebra, Geometry, Elementary Mechanics of Solids and Fluids, and one of the following subjects, viz: a Modern Language, Logic, Botany,

*College of Physicians and Surgeons, New York; National Medical College Washington; University of City of New York; Southern Medical College, Atlanta; Jefferson Medical College, Philadelphia; University, Louisville, Ky.; University of Maryland, Baltimore; Baltimore University; College of Physicians and Surgeons, Baltimore; Medical College of Virginia; Bellevue Hospital College, New York; Medico-Chirurgical College, Philadelphia.

Zoology, or Elementary Chemistry. After passing this examination, he enrolls himself in a hospital medical school, and five years later becomes "qualified" to practise.*

As a result of the ease with which diplomas may be obtained under our present system, many States, including our own, have found it necessary to establish Boards of Examiners, whose duty it is to see that applicants for licences are properly educated. The finding of this Board in Virginia is far from re-assuring to those States in which no such law exists, for from their report for 1888 we find that 22.5 per cent. of the applicants before it had been refused license.† New York has also attacked this evil, and has struck at its source by prescribing a three years' graded course as necessary for the degree of Doctor of Medicine from any of her schools, and requiring intending matriculates to undergo a preliminary examination in arithmetic, geography, grammar, orthography, American history, English composition and the elements of natural philosophy.‡ This examination is not conducted by the authorities of the medical schools, but by the Regents of the University of New York.§ In thus putting the entrance examination in the hands of those who are not interested financially in the admission or rejection of candidates, a great step in advance has been made. In addition to this provision, intended to raise the educational grade of those entering on the study of medicine, a State Board of Medical Examiners has also been established, whose duty is similar to that of the Virginia Board. In North Carolina a like safe-guard exists, as also in a few other States. In this way a protest has been made by some of our Legislatures against the reckless way in which too many of our schools grant diplomas; but so long as there is no limit to the number of medical schools, this evil will exist, for we cannot expect a school whose existence depends on its tuition fees, to commit suicide to elevate the dignity of our profession. To show that the evil is not imaginary, I will cite the opinion of Dr. John H. Rauch, late secretary of the Illinois Board of Health, as published in the New York Medical Record of May, 2, 1891.

*Announcement of Guy's Hospital Medical School, London 1889-90.

†Transactions Virginia Medical Society, 1888.

‡Circular of Information, College Physicians and Surgeons, New York.

§ Idem.

He says, "Except Belgium, this is the only country in the world where the license to practise and the M. D. degree can be obtained with only three years study. Even could American students learn more rapidly than foreigners, as is often asserted, the former's preliminary education is so much inferior to the latter's, that such an assertion applied to medical students becomes erroneous. With many American students the habit of application and of scientific and logical thought is not formed until the medical college is entered.

"The American degree is also cheap in a pecuniary sense. The average fees for the eleven London schools are, exclusive of the examination fees, £118, 5s.; for the provincial schools, £98. In addition each student has to pay from 10s. to £5 matriculation to one of the degree-granting bodies, from £1 to £15 for the first examination; from £1 to £10 for the second; from £2 to £15 for the first degree, or qualification examination, and from £5 to £15 for the second qualification examination. In some of the colleges in the United States, all the fees do not amount to \$200, and in at least one, the whole course of study and the diploma can be had for \$138."

"A careful study of the systems of education in foreign countries, show that a large part of the time and much of the money are spent in acquiring practical knowledge of medicine by actual work in hospitals, and this work is tested by practical examinations, such as are too infrequent in this country."

But I am not by any means a pessimist. Several of our American schools afford facilities for original scientific work that no foreign University, so far as I know, can offer. The pathological laboratory of the Alumni Association of the College of Physicians and Surgeons in the city of New York, is as superior in equipment and appliances to the laboratory of Guy's, of St. Bartholomew's, or even that of the great Krankenhaus in Vienna, as they were to the best American laboratory of fifteen years ago. Nor are we lacking in men whose attainments are equal to the best found abroad. Delafield, Prudden and Loomis; Dalton, Hun and Starr; Sims, Emmet and Thomas; McDowell, Markoe and Bryant are among the names that have given American medicine lustre wherever the healing art is studied; and yet

every steamer that carries passengers across the Atlantic, has on her list American students going abroad, often if not generally at the instance of our own professors.

How, then, shall the standard of medical education in this country be raised? I cannot presume to dictate, but will only offer a mode that is really self-evident. As the evil is two-fold, so must the remedy be. The laity must be educated more thoroughly in an appreciation of the highly educated medical man. We laugh at the superstitions of the Middle Ages, and yet we have almost as many around us to-day. Instances of this can be seen everywhere. In my own experience, I have seen men of education who habitually carried potatoes in their pockets to prevent rheumatism. Among the colored population, the belief in Voodooism is widespread, and is not a negligible factor in the treatment of their diseases. The veil of mysticism that surrounds the physician and his work must be swept away, and the laity educated to an appreciation of his labors. The principles of hygiene should be taught in the public schools, and the reasons for them given, so clearly as to be understood by all, for "the reason of the law is the life of the law," and unless the reason be seen, the laws of health will be but a senseless code of rules.

When we get an intelligent and appreciative body of laymen, we will find that it will no longer tolerate the half-finished product of many of our schools as at present managed. The low requirements for entrance and for graduation will have to be raised, and the American schools have it in their power to effect this renaissance of their own motion, and not as the result of pressure from without. To err is human, but, to paraphrase the familiar passage, to voluntarily correct the error when discovered, is divine.

Thus have I undertaken rapidly to trace the progress of our great calling as it has groped its way from the twilight of superstitious pathology into the clearer light of a more perfect day. A hope, sprung rather from the buoyancy of my youth than the teachings of experience, tempts me to paint the future with the gilded splendors of noon-day; but I fear, should I do so, many of the older and more learned heads before me will mark a dis-

approval well calculated to damp the ardor of one to whom the paths of our profession are still new.

The improvements in mechanical arts and the adaptation of newly discovered agencies in nature to the investigation and control of the occult secrets of the human organism, coupled with a profounder knowledge of physiology and pathology, and a bolder use of the scalpel in operative surgery, have caused that department of our work to take such strides in progressive development that it would seem that there is now no limit to its success, and, that great as has been its progress, its triumphs have just begun.

But while this is true of one great division of our labor, there has been no corresponding advance in the knowledge of the cause and cure of the diseases of mankind. The works of Koch, Lister, Sternberg, Ziegler and others have added much to our knowledge in the present generation, but even that much sinks into insignificance as compared with the vastness of the unexplored and unknown.

The thought and services of the physician have been demanded by man ever since the primal curse of his race robbed him of immortality and condemned him to return to the dust of his genesis through a life of sorrow and suffering; yet thousands of years have not sufficed to separate the truths from the superstitions of pathology, nor, in the minds of the public, to divorce the true physician from the quack, or the conjurer.

Nor can it be said that the public has no grounds for some misgiving. Men still suffer and die, and physicians who have probed all that we have yet learned of human disease and of remedies, stand by the bed-side, helpless and hopeless. It is true that all men must die; but, as in the science of human rights, there is a remedy for every wrong, so somewhere in her great dispensary, perhaps, has Nature provided a remedy for every disease, and only waits for man to find out thoroughly what the disease is and how it is caused, that she may in the plenitude of her mercy banish pain and leave the physical man with no foe but the slow though sure attrition, with which advancing years in obedience to the laws of God, wear away the strongest.

Still the nineteenth century has accomplished much and has

made vast strides in developing and increasing our knowledge of man's physical nature and structure, and any close observer will note with joy the great renaissance with which it is closing. The vast store of tested facts which the empiricism of past ages has garnered for our use, added to the results of careful experiments in laboratories throughout the world, are being so thoroughly winnowed, so logically classified, and so critically adapted to the human organism; and that organism itself, its structure and its wants are being so profoundly studied, that a great science is being evolved, so natural and so beautiful in its proportions that upon future generations will only devolve the pleasing duty of nurturing its growth and fostering its strength, until in its full-armed splendor it will go forth conquering and to conquer, a proof that in the economy of heaven there is no want which cannot be satisfied if man will be but true to himself, and with the unremitting labor of philanthropy, devote himself to the good of his fellow-man.

